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INVESTIGATING MOTIVATIONS AND EXPERIENCES OF DESIGN DOCTORAL STUDENTS

RESEARCH DESIGN AND RESULTS FROM A STUDY IN GERMANY

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ABSTRACT

In Germany, doctorates in the design discipline are developing with increased enrolments, completions and new programs. However we know little about the motivations, experiences and challenges of current candidates. Mixed-methods studies employ qualitative and quantitative methods to research such educational issues. On the basis of qualitative and quantitative data from a survey of doctoral students (n=39) gathered during a publicly funded research exchange, the authors demonstrate what can be learned through such methodologies. In this paper, we focus on the research methodology as it is applied in different studies in design in Germany and may be used as a basis for similar studies in other regions or domains. The study findings indicate some of the current tensions and challenges in this area, which require addressing as doctoral design in Germany develops.

Keywords:
survey study, design doctorate, Germany.

INTRODUCTION

In Germany, 25,000 people get a doctoral degree each year. There is no country where a larger percentage of each year does a doctorate. In the design discipline it is different. Despite Germany's long tradition of excellence in design (*Bauhaus*, *Hochschule für Gestaltung Ulm*, *Braun* etc., just to name a few), considerable influence in international design research debates (e. g. in the era of product semantics), design research is not well institutionalized in Germany's academia and thus doctorates in design have been rather uncommon in the recent decades. One issue that hindered more design doctorates is

the location of Germany's design education in the Universities of Applied Sciences (*Fachhochschulen*) and Art Schools (*Kunsthochschulen*) where Masters but not doctoral degrees are available. The mainstream university sectors, including a limited number of Art Schools (*Kunsthochschulen*), Technical Universities (*Technische Hochschulen*), and traditional Universities (*Universitäten*) have offered doctorates in design fields or accept design dissertation theses in related disciplines for at least thirty years, not to mention architectural, engineering or software design. There is a growing number of doctoral enrollees and graduates, and new doctoral programs incorporating practice-based components have been introduced. There is also a lively debate taking place regarding the meaning of design as an academic discipline or *Designwissenschaft*. Despite all this activity and the general significance of design fields, little is known about the current state of research in design in higher education. This is hampered by the fact that design education and research is overwhelmingly (and historically) a feature of the practice-based *Fachhochschulen* and some Art Schools, whose conception and practices of design often excludes the technical focus of industrial design, and even more notably lack relations to research and science institutions. Two specific weaknesses in current discussions continue to be lack of empirical studies and most claims about design research being normative opinion pieces. A second weakness is the tendency of existing discussions about the *Designwissenschaft* to have either artistic or historical or philosophical roots or biases. Through a more thorough review of the design discipline literature and empirical studies of doctoral candidates can a more informed picture of *Designwissenschaft* be developed.

DESIGN DOCTORAL EDUCATION AND DESIGNWISSENSCHAFT IN GERMANY

German design schools are part of the Higher Education system and affected by the Europe-wide Bologna process (e. g. Vehrkamp 2006) and changes towards implementation of funding and competition mechanisms that already operate in other academic disciplines in Germany as well as in the design field in the USA, UK, Australia and elsewhere.

The right to award doctoral degrees (*Promotionsrecht*) is given to the Universities by ministries of the federal states (*Bundesländer*). Applied universities (*Fachhochschulen*) are not allowed to offer doctoral education in general. Art schools, being the other common place for design education in Germany, are not treated equally across the federal states. Some Universities of Art have the right to offer doctorates in design, some only in »scientific« or technical subjects (e. g. art conservation), some haven't at all.

One issue that is closely connected to these restrictions is the fact that in Germany doctoral studies are traditionally seen as self-standing scientific research – the thesis being the proof – rather than postgraduate *education*.

Due to the Bologna process, Master's Degrees are offered both in the Applied and the traditional universities, bringing some tensions between schools and new pressures on students and faculty, including in design fields (Bürdek 2008; Stallman 2002; Wuggenig 2008; and see Kunzmann 2008 for the tensions in the design related area of urban design and town planning). The new (and rather universal) Masters degree, e.g. *M. A.* is better accepted at research institutions compared to the more specific *Diplom-Designer* degree. Before, degrees awarded by the *Fachhochschulen* were not accepted as a sufficient prerequisite for doctoral education, and *Diplom* candidates with non-university backgrounds completing additional transitional subjects to make them 'fit' for university study.

Design research and design as an academic discipline with 'scientific' pretensions – *Designwissenschaft* – is a subject of much debate in German speaking countries (Schneider 2005). However, concepts and positions in this area have emanated mostly from the applied university and art school sector and tend to

remain normative claims (see Brandes, Erlhoff & Schemmann 2007; Jonas & Romero-Tejedor Eds. 2010; Mareis 2011). A few pieces have also appeared about the individual experiences of individuals enrolling in doctorates in the design area (Grotensohn, Joost, Bandyopadhyay 2007). The recency of doctoral degrees for design fields means that there have been few completions and theses available, although this database is growing with open access and digital archives. This should prove useful in the future for analyses purposes.

In Germany, structured curriculums in doctoral education, such as those offered elsewhere, in the USA, UK and Australia (see Melles 2009), have not been begun offering a range of alternatives, such as individual seminars and other more structured programs aimed at ensuring better completion rates. New PhD programs at *Bauhaus-Universität Weimar* and at *Hochschule für Gestaltung Offenbach* brought new development to the field as both institutions require respectively fifty or thirty three percent of the PhD has a design project component; a model similar to the so-called practice-based PhD in Australia and the UK. This practice-based tradition with an 'artistic' component is the typical structure for the Doctoral degree in the Fine Arts (e. g. Zillig, 2009).

In many institutions also PhD enrolment is accompanied by a position as research assistant (*Wissenschaftlicher Mitarbeiter*, see Enders 1996) typically with teaching responsibilities. Other programs, including the new practice-based PhD in Weimar Bauhaus University has part-time students, who often run their design office or similar in order to finance life and PhD studies.

In view of the lack of studies in this area, funding was sought and obtained through the German Government DAAD (*Deutscher Akademischer Austauschdienst*) for an academic exchange fellowship to conduct a research and teaching visit to the country in summer 2010. Surveys of doctoral (n=39) and masters students (n=115), seminars and teaching in a number of universities, and a series of qualitative interviews with faculty and PhD students (n=25) across fifteen institutions were conducted (in German). This paper explains the research methods and reports on the results of the survey data addressing enrolled and completed PhD students. It examines the current design doctoral landscape as well as specifically the

individual motivations, experiences and challenges of PhD students in Germany. Future publications will address the broader data set and an analysis of published PhD theses is planned.

A complete overview of institutions and Universities offering design at undergraduate and postgraduate level, including doctorates, is difficult since the spread of design fields is wide and spread across a range of faculties; private schools also exist which may offer undergraduate training. Existing lists list institutions training up to Masters or the corresponding *Diplom* level – in Germany roughly equivalent to 10 Semesters or five years, and Art and Design Academies with *Promotionsrecht* (Right to offer Doctorates) but do not list Universities, including industrial design engineering, media design, and HCI oriented design fields for example. This exclusion of the university sector is a weakness of such lists.

In a recent text on *Designwissenschaft* (Jonas & Romero-Tejedor Eds. 2010) in Germany, a broad collection of authors – including senior researchers as well as doctoral candidates – give their opinion on the state of the field, highlighting the variability and the yet-to-be-established nature of the design discipline as a theory, research and practice oriented domain. Evidence from the broader literature and from results of this study suggest that variability and not consensus is the hallmark of *Design(wissenschaft)* in German speaking countries.

RESEARCH METHODS

The study was conducted as an internet survey based on semi-standardized questionnaires consisting of both closed and open-ended questions (see <http://opinio.online.swin.edu.au/s?s=7885>). The semi-standardized survey allows qualitative and quantitative evaluation methods to complement and enhance each other. The mixed methods approach applied in this study overcomes the opposition of qualitative and quantitative methods (see Creswell et al. 2003, Jick 1979 and others) and has been given more attention in social research as well as in arts and design research recently (cf. Melles 2008).

In total, 39 participants answered the questions partially or completely. Based on estimations about the number of people who are currently engaged in design doctoral studies or recently finished their thesis, the number of participants in this survey can be con-

sidered in broad terms representative for design doctoral students in Germany. These estimations refer to participants lists of the biannual *Design promoviert* colloquia (50-80), subscribers of the *Design promoviert* newsletter (~160, including few professors and a number of master's students who are interested in doctoral studies) and to published statistics of some of the few institutions offering design doctoral education in Germany (roughly 5-15 at each of the universities totalling 63). The number of designers involved in doctoral research at non-design institutions is hard to estimate. However, those designers have to pay regard to the rules of these institutions and are thus not covered by this study.

The questionnaire has been designed in English language. After translation, the questionnaire has been revised by a native German speaker. A back translation was suggested in order to ensure the original intent was preserved (Mertens 2005). Allowing the participants to answer in their mother tongue is important for two reasons. First, they not only understand the questions but can more easily express their experiences and opinions in their own language. Second but not less important, semantic issues are kept relatively small. For instance, the term *Designwissenschaft* does not express the same as its literal translation 'design science' would do. Those semantic issues can be better dealt with when translating the results of the analysis rather than translating the actual answers or even answering in foreign languages with limited language competences. Most of the participants answered in German except for a few international participants studying in Germany who preferred English since their mother tongue is different from German. In order to ensure reliability, parts of the qualitative evaluation have been accomplished by two coders independently. Based on the inter-coder agreement, reliability of the qualitative evaluation can be assumed.

The questionnaire asked for demographic details (institution etc.) as well as for the state of PhD research (in progress, finished) and the specific questions addressed specific issues. It should be noted that the PhD Degree designation is recent in Germany, where in design fields technical oriented studies will be awarded *Dr.-Ing.* (industrial design, some fields of architecture and media design) and other

degrees (Humanities, Social Sciences, Arts) typically *Dr. phil.* Thus, somewhat ironically a *PhD* in design fields (*Bauhaus-Universität Weimar*) indicates a practice-based doctorate with a lower prestige in academia than the other established doctoral designations. Besides these, some art schools award specific degrees such as the *Dr. phil. in art. (philosophiae in artibus)* at the *Hochschule für Bildende Künste Hamburg*, although this University's subjects do not explicitly cover design fields.

The question order was developed so that the easiest questions could be first addressed in order to enhance response rate (cf. e. g. Seale 2004):

1. school/ department
2. degree: Dr. phil./ Dr.-Ing./ PhD/ other
3. current PhD status: incomplete/ complete
4. doctoral topic and brief description
5. reasons for enrolment:
11 choices and comment box
6. experience with design methods and theory in previous study: 45 choices and comment
7. evaluation of the difficulty with writing, designing, speaking during study:
likert scale and comment
8. short description of the relationship between theory, methods and practice in design.

Thus the mix of quantitative and qualitative comment in the survey was an intentional attempt to allow for both types of data to play a role in the analysis. The survey itself also was conceived as one comment of a larger study incorporating qualitative expert interviews and, eventually, dissertation analy-

sis, multiple sources and source types being an essential feature of multi-method studies. We are of the view, that only such studies can move the discussion regarding Design as a Discipline for the rhetorical to a grounded analysis.

RESULTS

DEMOGRAPHICS: PARTICIPANTS AND TOPICS

Participating institutions do not represent the full spread of schools in this area although all three degree types are represented. In some cases schools, such as *Hochschule für Gestaltung Offenbach am Main*, which had only recently introduced design doctoral education, asked to be excluded as students would have no experience to draw on. Accessing candidates with completed PhDs was possible where university websites published this information and had candidate emails available. The majority of responders, as indicated above, were still enrolled at the time of the survey and at different stages of their candidature; a number commented on this fact in their answers.

MOTIVATIONS

In general motivations for doctoral study vary. As shown in figure 1, individual respondents motivations ranged from 1 to 11 (Median 3 / Mode 5). As shown in figure 1 the top three motivations (all engaging above 50% of respondents) were for personal development, improving job prospects and meeting the requirements for an academic career. In addition to noting some additional motivations under item 11,

Table 1. Participants of the survey.

Institution	Degree	Count (completed)
Bauhaus-Universität Weimar	PhD & Dr. phil.	5
Bergische Universität Wuppertal	Dr. phil.	6 (1)
Universität Duisburg-Essen	Dr. phil.	5 (3)
Hochschule der Bildenden Künste Braunschweig	Dr. phil.	4 (1)
Kunsthochschule Kassel	Dr. phil.	6
Technische Universität Berlin	Dr. phil.	1
Technische Universität Dresden	Dr.-Ing.	5
Technische Universität München	Dr.-Ing.	5
Universität der Künste Berlin	Dr. phil.	2 (2)
<i>total</i>		39 (7)

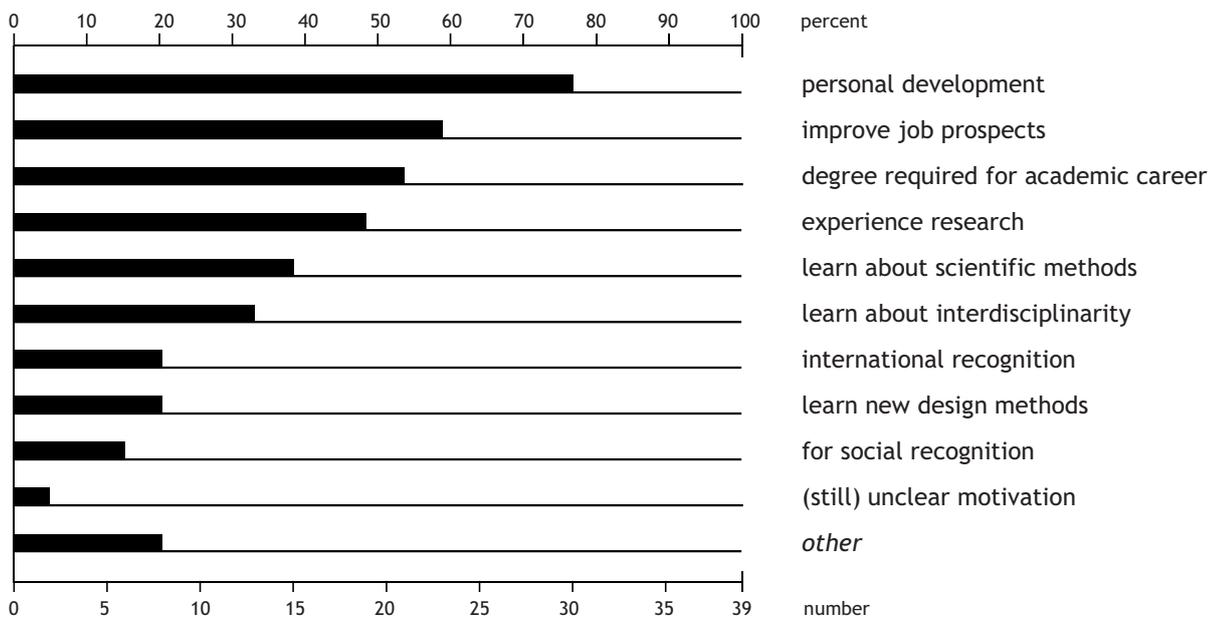


Figure 1. Motivations for enrolling a PhD in design in Germany.

26 respondents (67%) added additional comments about their enrolment. A common theme was personal enrichment and doctoral study as a way of exploring the connection between practice and research. It is interesting to note that research, scientific methods and interdisciplinarity all scored higher than experience with new design methods, perhaps suggesting that the doctorate was a way of expanding horizons beyond design as well as being explicitly linked to research training.

UNDERSTANDINGS OF DESIGN METHODS, THEORY, RESEARCH

In the next section respondents were given a list of forty five common research methods, approaches and theories to choose from and indicate what experience they had with these in their (prior) studies. The list of methods was taken from Brandes, Erlhoff & Schemmann (2007) and cross-checked with current English speaking texts (e.g. Laurel 2003). In order to apply the survey to possible further investigations in other countries, attention must be paid to national specifics. If these differ significantly from German ones, it must be decided whether to adopt the methods list and lose comparability or keep the list and thus comparability. As the word cloud in figure 2 shows, the choices covered the broad range of design fields and the small sample size and cannot be gene-

ralized. The final comment section asked about the relevance of the chosen methods etc. to doctoral study. There was some confusion for some respondents about whether the reference was to prior or current studies and this needed clarification through email.

Design theory was listed first by a majority, although given the uncertain status of such theory; the response begs as many questions as it answers. General social science methods, interview and observation, and literature review were ranked highly also. Such methods and processes, outside of strictly technical engineering work, are common. Given also the association of designlery methods, e.g. cultural probes with practice and undergraduate work – see comments below – the more limited value placed on these is not surprising. Be that as it may, midway in the top ten come the first design oriented options – semiotics, brainstorming, and mind maps – with some obvious relevance to design practices. Items that scored over 30% (roughly a third of respondents) show a mix of generic methods, e.g. case studies, and design specific processes, e.g. usability testing. Among the Other category the following four methods were listed: Model Theory (*Modelltheorie*), Sketching (*Entwurfszeichnen*), Moodboards, prototype and working models (*Arbeitsmodelle*), Design-based Research, and Design Work (*Gestaltung*).

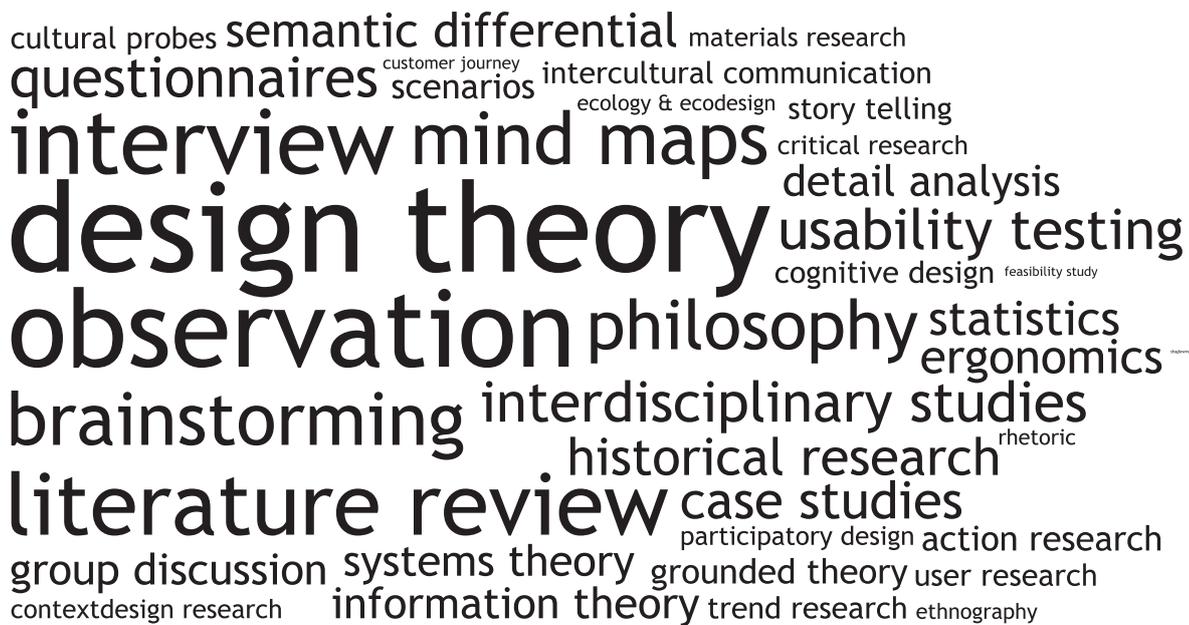


Figure 2. Word cloud of methods chosen by the participants (font size represents choice rate).

QUALITATIVE COMMENTS

ON METHODS AND THEORY CHOICES

Further comments have been given by over half the respondents (n=21/ 39 54%). A number of respondents referred to this distinction or commented on the fact that designerly methods were partly or wholly replaced by more generic social science methods and processes, e.g. qualitative research. Those working in more technical areas such as HCI and industrial design referred to lab tests, e. g. usability tests and ‘traditional’ methods.

In sum, there are strong normative expectations at the doctoral level for ‘scientific’ methods. In schools with stronger artistic conventions and backgrounds the idea of designing and testing solutions through use of designerly approaches is more common and this may be reinforced in areas where the new practice-based doctorates have been developed, e.g. *Hochschule für Gestaltung Offenbach am Main*. If, in fact, such interdisciplinary ways of working, including use of designerly methods, are to become more mainstreamed in *Designwissenschaft* this suggests the need to address this during the research training period. The occasional claim about the lack of research training structures and guidance during the doctoral process, and the relatively recent introduction of such processes in Germany, suggest an area requiring further work.

CHALLENGES: WRITING, DESIGNING AND SPEAKING

For all doctoral students, writing the dissertation represents a challenge. This may be particularly so for students in design and other creative fields whose background is often practice oriented with little emphasis on academic writing and scholarship. During doctoral study, students are also required to communicate their results in other ways, such as conferences and faculty seminars. Such forms of academic communication may also present challenges to students in the creative arts and industries. A third potentially challenging component of doctoral work in design fields is design work itself. While much of what passes for *Designwissenschaft* in Germany (and elsewhere) is primarily text work, the recent introduction of practice components in the doctoral programs in Weimar and Offenbach am Main have introduced this as a legitimate component.

In addition some doctoral programs in Design fields, particularly those emanating from art universities allow partial or substantial creative submissions, as in the tradition of the practice-based doctorates in the UK and Australia (see e. g. Pedgley & Wormald 2007); the possible or necessary inclusion of practice work in the doctorate is recorded in the Doctoral Degree Regulations (*Promotionsordnung*).

This text and practice combination in doctoral studies has not been developed to a clear state yet, as a

workshop dedicated to this issue at the 2010 German Society for Design Theory and Research (DGTF) conference demonstrated. In December 2011, the first *Conference on Practice-Based Research in Art and Design* will take place at the *Bauhaus-Universität Weimar*, aiming at revealing research methods in creative and artistic work in order to discuss how these could fit into current academic classification. In the few discussions in Germany regarding design as a discipline this practice and text combination is not often mentioned. This may be because some design academics may wish, as is the case elsewhere, to separate themselves from the visual and fine arts tradition (see Friedman 2003). Be that as it may in addition to HfG Offenbach am Main and the PhD program at *Bauhaus-Universität Weimar*, the *Muthesius-Kunsthochschule Kiel*, *Kunsthochschule für Medien Köln* and other Universities establish the model of practice-based research in (design) doctorates. The questionnaire also included a Likert scale, which due to the limited number of participants could not be analysed for reliable results. However, when combining the sample of this study with further investigations, the particular data of the Likert scale might become valuable again.

RANKING DIFFICULTIES

In four responses no answer was given, for the remaining 35 responses, participants were asked to assess the difficulty of the writing, speaking and designing work components of the doctoral study. A majority ranked writing the most difficult in comparison to the other two areas.

QUALITATIVE COMMENTS ON DIFFICULTIES

A majority of respondents (30/ 39 = 77%) gave qualitative comments on this section. A Number of doctoral candidates experienced general difficulties in finding an adequate overall dissertation structure, students noted that were unable to evaluate difficulties at early stages of the studies. According to the answers, one reason for the uncertainties of supervision was the 'newness' of the design doctorate. Also, the identification of relevant methods for the study was partly problematic.

As for the writing difficulties, a certain lack of preparation or training in writing during design studies has been experienced. This is accompanied by a gen-

eral challenge of managing a diverse literature, managing and writing about interdisciplinary work. Not only the part-time students but also those doctoral candidates who work as research assistants, indicated difficulty in managing work and study balance. As a side-note, few participants explained their trouble with institution requirements that seemed illogical to them.

PRACTICE-THEORY-RESEARCH – DEFINING THE INTERSECTION

The final section of the study asked respondents to comment on the relationship between theory, practice and research in design. The term *Designwissenschaft* is viewed as ill defined by the survey participants – there were opinions about similarity or dissimilarity to arts research. The affiliation to, methods transfer from and reserve against traditional sciences has been proposed, partly connected to the issue of additional capabilities and public funding. Some of the participants pointed to interdisciplinary or transdisciplinary aspects of *Designwissenschaft*. On the other hand, some mentioned designerly approaches and ways of problem solving. Specific design related concepts such as experiencing, meaning, social relevance and responsibility as well as critique have been mentioned. According to the formulation of the question, some of the participants discussed the relationship between practice and research. Some of them indicated differences or even a gap between both; most of them value theory as basis for practice and reflection. Some individual pointed at the need for practical relevance and the integration of practical problems into academic design research.

SUMMARY AND DISCUSSION

This study gives some insight into the current state and establishment of design as an academic discipline in Germany based on qualitative comments by current design doctoral candidates. Unsurprisingly, there is no overall agreement on what *Designwissenschaft* is or should be and how it is or should be related to design practice. As far as it could be analysed from the survey data, there is also no consistent if any approach to the tie between design research and practice in doctoral studies. Extended research based on the analysis of PhD theses will be possible (and appropriate) when an adequate number

of doctoral candidates currently enrolled especially in the practice-based programs finished and published their studies.

The emphasis of this paper was given to survey research methods and the findings as an indication of the status of *Designwissenschaft* in Germany. A more detailed presentation of the survey results is currently under review for publication. Further research is in progress, for example, analysis of expert interviews have been conducted in order to clarify different conceptions of design theory in German academic design research. As far as *Designwissenschaft* is concerned, only few design dissertations incorporate designing itself rather than historical or methodological investigations.

Also, a comparative study with doctoral students in other disciplines – in established academic disciplines as for instance social sciences, engineering sciences, cultural studies – could be used to further elucidate the specifics of design doctorates (in Germany). One specific research question could concern a comparison to experienced writing difficulties by doctoral candidates in other »hands-on« disciplines with little text-based work such as engineering.

Analysis of the current motivations and challenges of design doctoral students in further countries is on the agenda, Swiss being the first. Here, although similar issues like the Bologna process are drivers of current development, the field of academic design discipline and design doctorate issues differ from Germany. However, due to regional neighbourhood, common language (northern Swiss) and for instance the link between the *Swiss Design Network* and German design, much of the survey design described in this paper may fit for an investigation into the Swiss design landscape, too. In other countries, even within Europe – e. g. Italy (again a neighbour of Swiss) or Scandinavian countries – the survey design may not fit as it is. Depending on these changes and sample adequacy, the mixed methods approach will allow comparison of motivations and challenges of students in different countries both on a qualitative and quantitative basis. Statistical analysis may supplement content analysis as well as literature review, giving a broad overview about and insight into current status and development of design doctoral studies in different regions.

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